

**Draft Rule  
#01-180(WPCB)**

**Rule 13: Operational Rule**

SECTION 1. 327 IAC 8-13 IS ADDED TO READ AS FOLLOWS:

**327 IAC 8-13-1 Purpose of rule**

**Authority:** IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

**Affected:** IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

**Sec. 1.** The purpose of this rule is to establish and maintain standards of operation and require corrections to drinking water source, water treatment plant and distribution system operations so as to protect human health and prevent adverse impacts to drinking water. *(Water Pollution Control Board; 327 IAC 8-13-1)*

**327 IAC 8-13-2 Applicability of rule**

**Authority:** IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

**Affected:** IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

**Sec. 2.** The standards and practices established in this rule apply to the operation and maintenance of all new or existing public water systems in Indiana. Each public water system shall comply with this rule. *(Water Pollution Control Board; 327 IAC 8-13-2)*

**327 IAC 8-13-3 Definitions**

**Authority:** IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

**Affected:** IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

**Sec. 3.** The following definitions apply throughout this rule:

- (1) "Aggressiveness" means the property of water that wears away or deteriorates material due to chemical reactions with its environment.
- (2) "Chlorine Demand" means the difference between the amount of chlorine added to the water and the amount of residual chlorine remaining after a given contact time. Chlorine demand may change with dosage, time, temperature, pH, and nature and amount of the impurities in the water.
- (3) "Consecutive water system" means one public water system (PWS) supplies water to one or more other PWSs (40 CFR 141.29).
- (4) "CT" or "CTcalc" is the product of residual disinfectant concentration (C) in milligrams per liter determined before or at the first customer and the corresponding disinfectant contact time (T) in minutes, such as C H T. If a public

water system applies disinfectants at more than one (1) point prior to the first customer, it must determine the CT of each disinfectant sequence before or at the first customer to determine the total percent inactivation or total inactivation ratio. In determining the total inactivation ratio, the public water system must determine the residual disinfectant concentration of each disinfection sequence and corresponding contact time before any subsequent disinfection application point.  $CT_{99.9}$  is the CT value required for ninety-nine and nine-tenths percent (99.9%) (3-log) inactivation of *Giardia lamblia* cysts.  $CT_{99.9}$  for a variety of disinfectants and conditions appears in Tables 1.1-1.6, 2.1, and 3.1 of paragraph 141.74(b)(3)<sup>1</sup>.

$$\frac{CT_{calc}}{CT_{99.9}}$$

is the inactivation ratio. The sum of the inactivation ratios or total inactivation ratio shown as:

$$\sum \frac{(CT_{calc})}{(CT_{99.9})}$$

is calculated by adding together the inactivation ratio for each disinfection sequence. A total inactivation ratio equal to or greater than one (1.0) is assumed to provide a 3-log inactivation of *Giardia lamblia* cysts.

(5) "Critical part" means a piece of equipment essential to the safe and reliable operation of a public water system, including expendable parts such as glassware, fittings, hose clamps, and gaskets.

(6) "Distribution system" means one (1) of the following:

(A) In a community public water system, the term means the network of water piping, pumping stations, storage equipment, valves, fire hydrants, pressure regulators, and equipment required to transport water to the customer's service connection from one (1) of the following points:

- (i) A treatment plant.
- (ii) A source of raw water supply if no treatment is provided.
- (iii) A source of purchased water supply if no additional treatment is provided.

(B) In a noncommunity public water system, the term means the network of water piping, pumping stations, valves, fire hydrants,

pressure regul

- (i) A point that is one (1) foot beyond the water storage tank.
- (ii) The well if no water storage tank is utilized.
- (iii) A source of purchased water supply if no additional treatment is provided.

(7) "Filter run time" means the length of time a filter is operating between backwash cycles to produce filtered water.

(8) "Flushing" means sending water through a portion of the system at a sufficient volume and velocity with the intent to remove undesirable materials.

(9) "Flushing device" means any device used for flushing.

- (10) "Hydraulic information" means the following:
- (A) Hydraulic grade line.
  - (B) Water surface in an open channel.
  - (C) Water surface of the groundwater table.
  - (D) Water pressure for pipe under pressure (shows different pressures plains).
- (11) "Interconnections" means a public water system supplies water to or receives water from another public water system.
- (12) "Maintenance Log" means a method of recording the following:
- (A) Maintenance of the distribution system, including appropriate pipe replacement and repair procedures.
  - (B) Main flushing programs.
  - (C) Maintenance of storage tanks and reservoirs.
  - (D) Continual maintenance of positive water pressure in all parts of the distribution system.
- (13) "Major system components" means any equipment that if failed would cause:
- (A) water pressure below 20 psi at the consumer's meter; or
  - (B) water quality that violates 327 IAC 8-2.
- (14) "Process flow" means how the water flows from the source through the treatment process to the first customer.
- (15) "Pumping test" means a test that is run on a well to determine static water level, pumping water level, and draw down.
- (16) "Pumping water level" means the vertical distance in feet from the centerline of the pump discharge to the stabilized level of the ground water during pump operation.
- (17) "Rapid mix" means the rapid dispersion of chemicals throughout the water to be treated, usually by violent agitation.
- (18) "Secondary maximum contaminant level" or "SMCL" means the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system. The term does not include contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality. SMCLs apply to public water systems and, in the judgement of the commissioner, are requisite to protect the public welfare.
- (19) "Service Connection" means a piping connection between the water purveyor's main or well and a consumer's system.
- (20) "Significant deficiency" means any defect in a system's design, operation, maintenance, or administration, as well as any failure or malfunction of any system component, that the commissioner determines to cause, or have the potential to cause, an unacceptable risk to health or that could affect the reliable delivery of safe drinking water.
- (21) "Source" means the origin of the water that is treated or distributed whether it

is ground water, surface water, or purchased water.

(22) "Specific capacity" means the rate of discharge of a production well per unit of draw down. This term is commonly expressed as gallons per minute per foot of drawdown.

(23) "Static water level" means the elevation or level of the water table in a well when the pump is not operating.

(24) "Supplier of Water" means owner, operator, purveyor, or governing body of a public water system.

(25) "Susceptible population" means a population subgroup that is more sensitive to a contaminant than the general population. Susceptible populations include the following:

- (A) Schools.
- (B) Correctional facilities.
- (C) Health care facilities.
- (D) Agricultural labor camps.

(26) "Treatment system" means any combination of devices and chemicals used for the purpose of modifying the water's characteristics.

(27) "Well yield" means the flow rate at which a well will discharge water on a sustained basis.

*(Water Pollution Control Board; 327 IAC 8-13-3)*

#### **327 IAC 8-13-4 Operation**

Authority: IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

Affected: IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

*(From 8-13-5 (b) An owner of a public water system is responsible for ensuring that:*

*(1) The system complies with this rule.*

*(2) The system's operating staff has all of the resources and training necessary for proper operation of the system.)*

Refer to 327 IAC 8-12-3.2

*(Water Pollution Control Board; 327 IAC 8-13-4)*

#### **327 IAC 8-13-5 Maintenance**

Authority: IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

Affected: IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

**Sec. 5. (a) A supplier of water shall ensure that the public water system is operated to provide and maintain safe drinking water to consumers. This responsibility includes the following:**

- (1) Maintaining or contracting trained staff to perform all necessary duties.**
- (2) Performing maintenance and replacement of equipment when necessary.**
- (3) Providing testing to control and monitor treatment processes and chemical**

addition programs.

(4) Providing laboratory equipment for determining the effectiveness of treatment. Testing and measurement equipment shall be provided to monitor for control of the treatment processes at all plants.

(b) An owner of a public water system is responsible for ensuring that:

- (1) The system complies with this rule.
- (2) The system's operating staff has all of the resources and training necessary for proper maintenance of the system.

(c) A supplier of water shall meet the flow rate and pressure requirements set forth in 327 IAC 8-3.4-12.

(d) A public water system shall ensure that chemicals added to drinking water and passed to the distribution system are approved by any of the following:

- (1) As required by the Indirect and Direct Additive Rule.
- (2) As required by NSF 60 and 61.

(e) All prepackaged chemical containers shall bear the name, address and telephone number of the supplier. All bulk storage containers shall bear the functional name or identification and strength of the chemical, along with fill lines.

(f) Chemicals shall not be fed in excess of the maximum dosage approved by U.S. EPA or USFDA.

(g) A public water system shall comply with 327 IAC 8-3 when one or more construction permits are required.

(h) A public water system shall have an operation and maintenance program in which the system maintains compliance with this article and The Safe Drinking Water Act. The program must also include a documented operation and maintenance plan. Public water systems classified as class DSS (distribution system small) or other systems approved by the commissioner may use a checklist instead of a documented operational plan.

(i) A public water system shall have a procedure or method to obtain critical spare parts available to address reasonably foreseeable needs in a timely fashion in order to prevent adverse impacts to drinking water. (*Water Pollution Control Board; 327 IAC 8-13-5*)

#### **327 IAC 8-13-6 Operation and Maintenance Program**

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

Affected: IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

**Sec. 6. (a) The Operation and Maintenance Program required under section 5 of this rule must contain a description of known system components including the following:**

- (1) Source.**
- (2) Treatment system.**
- (3) Storage system.**
- (4) Distribution system.**
- (5) Interconnections.**
- (6) Meters that are used for system flow or process control.**
- (7) Pumps.**

**The description must include all information necessary for operation, maintenance, repair and their location as applicable based on the best available information.**

**(b) The Operation and Maintenance Program required under section 5 of this rule must contain an approach for maintaining the operation to include at a minimum the following:**

- (1) A schematic drawing of the process flow.**
- (2) Schematic drawings for the following if available:**
  - (A) Hydraulic information.**
  - (B) Supervisory Control and Data Acquisition (SCADA) system information.**
- (3) Process operation description which includes all of the major system components.**
- (4) Manufacturer's Operation Manuals if available.**
- (5) An overview of security measures which may include fencing, securing of components, employee training, and access controls.**

**(c) The Operation and Maintenance Program required under section 5 of this rule must contain a maintenance schedule of how major system components are maintained including the following:**

- (1) Target frequency.**
- (2) Maintenance logs.**
- (3) The portion of the manufacturer's O & M manual dealing with maintenance frequency if available.**
- (4) Description of maintenance procedures.**

**(d) The Operation and Maintenance Program required under section 5 of this rule must contain a contact list with names and phone numbers including the following as applicable:**

- (1) Vendors and suppliers.**
- (2) Responsible staff.**
- (3) Contractors utilized by a public water system.**
- (4) Utilities.**
- (5) Regulatory Agencies.**

- (6) Management.**
- (7) Consultants used by a public water system.**
- (8) Critical Users.**
- (9) Emergency contacts.**
- (10) Other contacts utilized for O & M functions.**

**(e) The Operation and Maintenance Program required under section 5 of this rule must contain an approach for maintaining safety procedures.**

**(f) The Operation and Maintenance Program required under section 5 of this rule must contain an approach for maintaining a supply inventory including the following if applicable:**

- (1) Treatment chemicals.**
- (2) Critical spare part/equipment/lubricants.**
- (3) Testing/lab supplies.**
- (4) General supplies.**

**(g) The Operation and Maintenance Program required under section 5 of this rule must list information regarding compliance monitoring and reporting including the following:**

- (1) To whom the operating staff of a public water system reports.**
- (2) What is reported.**
- (3) Frequency of reporting.**
- (4) Where reports are sent.**
- (5) Method of information reporting.**
- (6) Location of where reports are maintained.**

**(h) The Operation and Maintenance Program required under section 5 of this rule must contain a method for keeping records. The method must include keeping the records current for all information required by this section.**

**(i) For all existing public water systems, the Operation and Maintenance Program required under section 5 of this rule must be in place according to the requirements below:**

- (1) DSS and DSM one year from the effective date of this rule.**
- (2) DSL and WT2 two years from the effective date of this rule.**
- (3) WT3, WT4, WT5 three years from the effective date of this rule.**

**(j) All new construction completed on any existing public water system after the effective date of the rule must be accurately represented and included in The Operation and Maintenance Program within one year of completion of that construction.**

(k) For new public water systems that commence construction on or after the effective date of this rule, an Operation and Maintenance Program required under section 5 of this rule must be in place within one (1) year of completion of construction.

(l) The commissioner may require additional information if necessary on a case-by-case basis. (*Water Pollution Control Board; 327 IAC 8-13-6*)

### **327 IAC 8-13-7 Distribution System**

**Authority:** IC 13-13-5-1; IC 13-13-5-2; IC13-18-3-2; IC 13-18-11-13; IC 13-18-16-9

**Affected:** IC 13-14-1-13; IC 13-14-8; IC 13-18-11-2

**Sec. 7. (a) Distribution system pressure requirements are as follows:**

(1) The system shall be designed and operated to maintain a minimum residual pressure in accordance of 327 IAC 8-3.4-12

(2) The system shall be designed to at least meet existing demands for drinking water use on the distribution system. A public water system may not add customers unless they can show they can meet section 7(a)(1). If twenty (20) psi can not be maintained, the system shall be upgraded to meet requirements.

(3) Where the distribution system, existing or new storage, or pumping cannot provide a minimum pressure of twenty (20) psi throughout the distribution system at ground level, it shall be necessary to create a boosted pressure zone to serve those portions of the system.

(4) Community and Nontransient noncommunity systems must have a method for recording pressure representative of the distribution system twenty-four (24) hours a day.

(b) A sample site plan and map including addresses must meet the following:

(1) A Public water system must collect total coliform samples at sites which are representative of water throughout the distribution system according to a written sample siting plan approved by the commissioner. A site plan is to be on file in the Drinking Water Branch, Office of Water Quality, and the system files.

(2) The general location of routine sample sites must be indicated on the site plan and map and the specific locations are to be identified using a three (3) digit identification number e.g., (001). Using the three (3) digit identification number, a corresponding list is to be completed which includes the address and phone number of each site. The number of sites is based on the population served by the water supply. Systems should choose sites with dedicated sampling taps or businesses with ready access. Dead end lines and outside spigots shall be avoided. The plan, as submitted to the Drinking Water Branch, is reviewed for completeness by the field inspector.

(3) The sample site plan and map required under subdivision (d)(1) must be reviewed annually and updated as appropriate.

**(c) A public water system must meet the following:**

**(1) Dead ends shall be minimized by looping mains whenever feasible. Where dead end mains occur, they shall terminate with an adequate flushing device. Refer to 327 IAC 8-3.2-13 for further dead end requirements.**

**(2) A flushing device must meet the following:**

**(A) Existing public water systems shall provide flushing devices to ensure that quantity and quality of water are not adversely impacted.**

**(B) Public water systems designed and constructed after the effective date of this rule must comply with flushing device requirements of 327 IAC 8-3.2-15.**

**(C) A flushing device that has an apparatus that drains which is found to be connected to, or located within ten (10) feet of sanitary sewers or storm sewer inlets must be disconnected, relocated, or plugged.**

**(3) Valves must meet the following:**

**(A) Public water systems shall have valves to minimize customer service disruptions.**

**(B) Public water systems designed and constructed after the effective date of this rule must comply with valve requirements of 327 IAC 8-3.2-14.**

**(C) Valves should be exercised at a frequency to maintain proper operation.**

**(4) Water Loading Stations must meet the following:**

**(A) There may be no back flow to the public water supply.**

**(B) The piping arrangement shall prevent contaminants being transferred from a hauling vessel to others subsequently using the station.**

**(C) Hose connections used for potable water may not come into contact with the ground. If the hose connections become contaminated by the ground, they shall be disinfected according to 327 IAC 8-3.2-18.**

**(5) Booster Stations shall have automatic control equipment or monitoring controls installed to prevent the pump from causing a vacuum or lowering water pressure in any part of the distribution to less than twenty (20) psi as measured at ground level.**

**(d) A supplier of water shall perform routine maintenance to ensure leaks are discovered and repaired as soon as possible.**

**(e) Backflow preventors shall be provided and maintained according to 327 IAC 8-10. (Water Pollution Control Board; 327 IAC 8-13-7)**

### **327 IAC 8-13-8 Source, pumps, and control valves**

**Authority:**

**Affected:**

**Sec. 8. (a) Source requirements are as follows:**

**(1) Requirements for wells are as follows:**

**(A) Wells constructed after the effective date of this rule shall be constructed according to 327 IAC 8-3.4-1.**

**(B) Pumping tests shall be conducted as follows:**

- (i) All Community water systems shall conduct pump tests no less frequently than once in a two year period;**
- (ii) Nontransient noncommunity water systems with susceptible populations shall conduct pump tests no less frequently than once in a two year period;**
- (ii) Nontransient noncommunity water systems without susceptible populations and all Transient water systems shall conduct pump tests no less frequently than once in a four year period; or**
- (iii) A public water system shall have a plan in place for conducting pumping tests based on previous records that demonstrate efficiency of the well.**

**(C) Pumping tests shall be used to determine specific capacity or efficiency of the well.**

**(D) The following information on well and well pumping equipment shall be maintained by the utility, and updated when any changes occur:**

- (i) Well log if available.**
- (ii) Date well was installed.**
- (iii) Rated Capacity.**
- (iv) Total Well Depth.**
- (v) Diameter of casing.**
- (vi) Type of aquifer formation if known.**
- (vii) Length of screen or open interval if available.**
- (viii) Diameter of screen, if applicable.**
- (ix) Type of screen material and slot/opening, if available.**
- (x) Date and results of most recent flow test.**
- (xi) Specific Capacity of well at installation.**
- (xii) Design head and shut-off pressure of pump.**
- (xiii) Pump suction setting depth.**
- (xiv) Pump head discharge size.**
- (xv) Size and type of column piping, including length and number of column sections if available.**
- (xvi) Number of pump stages.**
- (xvii) Pump curves from the manufacturer or based on the most recent flow test.**
- (xviii) Data on the pump motor, including type, horsepower, voltage, RPM, amperes and number of phases.**
- (xix) Well or pump maintenance activities records.**
- (xx) Cleaning reports shall be kept on hand for the life of the well.**

**(E) At a minimum, production wells and or well pumps shall be cleaned or**

repaired if one of the following conditions exist:

- (i) Well yield is less than sixty-six percent (66%) of original capacity.
- (ii) Significant increases in drawdown are identified.
- (iii) The presence of fine-grained materials, sand, silt, or clay, are identified in the pumped water.
- (iv) Increased or significant changes in water turbidity, odor, taste, or color are identified.
- (v) A complete loss of production from the well.
- (vi) Any other significant change in the operation of the well or pumping equipment is recognized.

(2) Requirements for surface intakes are as follows:

- (A) The minimum design velocity of flow must be twenty-five hundredths (0.25) to fifty hundredths (0.50) feet per second (fps) through the inlet structure so that frizzle ice will be held to a minimum.
- (B) Protection must be provided against damage due to dragging anchors, ice, and other activities.
- (C) Diversion devices shall be operated in a manner to keep materials from clogging the intake structure.
- (D) As built drawings must be maintained in the records.
- (E) Impoundments, reservoirs, and associated spillways and release structures owned and operated by a public water supply shall be inspected on a regular basis and maintained to ensure the continued provision of water.

(3) Potable water lines are to be distinguished from all other piping by marking or some other method.

(4) All community water systems using groundwater in whole or in part shall have an approved wellhead program pursuant to 327 IAC 8-4.1.

(5) All public water systems shall take into consideration the following items to protect water supplies from the entrance of contaminants:

- (A) Privies.
- (B) Septic tanks.
- (C) Cesspools.
- (D) Sewers (storm, sanitary, combined, and sewer service connections).
- (E) Subsurface seepage-disposal lines.
- (F) Pits or ponds receiving fluids such as surface waters, oils, and grease.
- (G) Flood waters.
- (H) Integrity of the well casing.

(b) A public water system must comply with the following pump and control valve requirements:

(1) The following are requirements concerning lubrication:

- (A) Water lubricated pumps are required.

(B) All prelubricating lines shall be equipped with metering controls to monitor and limit the volume of prelubrication water.

(2) Maintenance inspection of pumps shall evaluate the following as applicable to ensure maximum operating efficiency and minimum maintenance expenditures:

- (A) Priming system.
- (B) Packing and seals.
- (C) Bearings.
- (D) Vibration.
- (E) Alignment.
- (F) Sensors and controls.
- (G) Pressure gauges.

(3) Pump valve requirements are as follows:

(A) Pumps shall be adequately valved to permit satisfactory operation, maintenance, and repair of the equipment.

(B) If foot valves are necessary, they must:

- (i) Have a net valve area of at least two and one-half ( $2\frac{1}{2}$ ) times the area of the suction pipe; and
- (ii) Be screened.

(C) Each pump shall have a positive-acting check valve between the pump and the discharge valve.

(4) Any pump discharging to the distribution system or pumping within the distribution system shall have the following:

(A) A standard pressure gauge on its suction and discharge line.

(B) A compound gauge on its suction line if applicable.

*(Water Pollution Control Board; 327 IAC 8-13-8)*

SECTION 9. 327 IAC 8-13-9 IS ADDED TO READ AS FOLLOWS:

**327 IAC 8-13-9 Chemical Treatment**

**Authority:**

**Affected:**

**Sec. 9. (a) General requirements for a public water system that use chemical treatment in order to ensure that the finished water supplied to consumers does not exceed the maximum contaminant levels (MCL), the maximum residual disinfectant levels (MRDL), the action levels, or the treatment techniques contained in 327 IAC 8-2, 327 IAC 8-2.5 or 327 IAC 8-2.6 are as follows:**

**(1) Feed equipment requirements are as follows:**

**(A) Chemical feeders shall be:**

- (i) maintained in operational condition;**
- (ii) accessible for repair and maintenance; and**
- (iii) protected against dust hazard.**

**(B) Feed equipment shall only be operated when there is flow past the point of application.**

- (C) Chemical feed rates shall be proportional to flow or adjusted as necessary to account for water quality conditions and to prevent overfeeding.
- (D) A method of measuring chemical usage shall be provided for all chemicals.
- (E) A separate feeder shall be used for each chemical applied.
- (F) Where disinfection is required, backup disinfection equipment shall be provided where necessary to meet contact time and disinfectant residual to maintain a level according to 327 IAC 8-13-9(c) and 327 IAC 8-13-9(d).
- (2) Equipment shall be installed and operated at the water treatment facility to comply with the disinfectant residual requirements of this section.
- (3) Piping identification requirements are as follows:
- (A) A water treatment facility shall have the means to clearly identify all visible piping in a water treatment facility by way of labels, legends, color coding as described in Recommended Standards for Water Works and other approved standards. A consistent system shall be used throughout the system.
- (B) Exposed potable water lines shall be clearly identified and identified where dual water lines or pressure sewer systems exist.
- (4) Chemical storage and handling requirements are as follows:
- (A) All chlorine containers, full, empty, or in use, shall be restrained in a secure position to prevent leakage, damage, or movement.
- (B) Feed stock solution must be maintained in such a manner that prevents biological growth.
- (C) Corrosion-resistant containers shall be provided for solution tanks and dispensers. Existing equipment may be used as long as the integrity is maintained.
- (D) Appropriate personal protection equipment must be provided. Material Safety Data Sheets or manufacturer's recommendations for handling procedures shall be available when chemicals are stored or handled.
- (E) Disinfection must be practiced according to Recommended Standards for Water Works and other applicable requirements.
- (5) Requirements for equipment used for disinfection are as follows:
- (1) When finished water storage is used to provide proper contact time for disinfection, documentation shall be maintained and available to assure adequate detention time under all operating conditions.
- (2) Residual levels of total chlorine shall be maintained at least at one and zero-tenths (1.0) milligram per liter or at a level that will achieve the necessary contact time at or prior to the first customer according to 327 IAC 8-2-1(15) and 327 IAC 8-
- (c) Specific requirements for treating with chlorine are as follows:

- (1) Equipment used for the production of chlorine shall be:
- (A) Capable of maintaining a minimum free chlorine residual of twenty hundredths (0.20) milligram per liter or a minimum total chlorine residual of one and zero-tenths (1.0) milligram per liter in all parts of the distribution system.
  - (B) Capable of feeding chlorine to the water being treated at a dosage rate of at least four and zero-tenths (4.0) milligrams per liter.
- (2) Continuous disinfection of water drawn from groundwater sources may be required by the commissioner if water quality data, well construction, or system construction indicates a potential health hazard.
- (3) Disinfection is to supplement and not replace proper well construction, and source protection.
- (4) Specific requirements for testing of chlorine residual are as follows:
- (A) Testing for free and total chlorine residual shall be completed when the system is in operation, at the place of the distribution system at one or more points representative of the distribution system. A free and total chlorine residual test shall be completed and recorded on all bacteriological sample reports prior to submitting the bacteriological results; or
  - (B) A systematic plan shall be in place to show that chlorine levels are met in the distribution system based on water flow and chlorine usage. A free and total chlorine residual test shall be completed and recorded on all bacteriological sample reports prior to submitting the bacteriological results.
- (5) The commissioner may require any of the following when deemed necessary for public health protection:
- (A) A minimum chlorine residual for all public water systems per 327 IAC 8-2-8.7(5) and 327 IAC 8-2-8.8(d).
  - (B) A minimum chlorine residual for all public water systems per 327 IAC 8-2-8.7(5) and 327 IAC 8-2-8.8(d).
  - (C) A minimum chlorine residual for all public water systems per 327 IAC 8-2-8.7(5) and 327 IAC 8-2-8.8(d).
- (6) Distribution system for groundwater systems shall be maintained at one of the following:
- (A) At a minimum, twenty-hundredths (0.20) milligram per liter free chlorine.
  - (B) The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, as specified in 327 IAC 8-2-8.7(5) and 327 IAC 8-2-8.8(d), cannot be undetectable in more than five percent (5%) of the samples each month, for any two consecutive months that the system serves water to the public.
  - (C) Water in the distribution system with a heterotrophic bacteria concentration greater than or equal to five hundred (500) per milliliter, measured as heterotrophic plate count (HPC) as specified in 327 IAC 8-2-8.7(3), is deemed to have a detectable disinfectant residual for purposes of determining

compliance with this requirement. Thus, the value V in the following formula cannot exceed five percent (5%) in one (1) month, for any two (2) consecutive months:

$$V = \frac{c+d+e}{a+b} \times 100$$

Where a = number of instances where the residual disinfectant concentration is measured  
:

- b = number of instances where the residual disinfectant concentration is not measured but HPC is measured
- c = number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured.
- d = number of instances where no residual disinfectant concentration is detected and where the HPC is greater than five hundred (500) per milliliter
- e = number of instances where the residual disinfectant concentration is measured and HPC is greater than five hundred (500) per milliliter

(7) If the commissioner determines, based on site-specific conditions, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified in 327 IAC 8-2-8.7 and that the system is providing adequate disinfection in the distribution system, the requirements of subdivision (6) do not apply.

(8) The commissioner may require an increase in disinfectant residuals based on bacteriological samples that demonstrate the need for increased residual.

(9) If residual cannot be maintained, operational adjustments shall be made to assure the residual is maintained or additional chlorination facilities shall be installed and operated.

(10) All water free and clear of chlorine shall be analyzed within eight (8) hours after collection.

(11) Adding disinfectant may result in an increase in other contaminants of concern, depending on the characteristics of the source water and the distribution system.

These contaminants are disinfection byproducts, lead, copper, and arsenic. A system will have the authority to select among a variety of corrective actions including the following:

- (A) Treatment of source.
- (B) Purchasing water from another source.

Options will be acceptable upon the approval of the commissioner.

(D) Specific requirements for treating with chloramines are as follows:

Any facility used for the production for chloramines shall be capable of maintaining a minimum of one and zero-tenths (1.0) milligram per liter total chlorine in all active parts of the distribution system.

(2) Continuous disinfection of water drawn from groundwater sources may be required by the commissioner if water quality data, well construction, or system construction indicates a potential health hazard.

(3) Disinfection is to supplement and not replace proper well location, construction and source protection.

(4) Specific requirements for testing of chloramine residual are as follows:

(A) Testing for chloramine residual shall be completed daily, when the system is in operation, at the plant tap, and in the distribution system at one or more points representative of the distribution system. Chloramine residual sample shall be completed and recorded on all bacteriological sample reports prior to submitting the bacteriological results.

(B) A systematic plan shall be in place to show that chloramine residuals are met in the distribution system based on water flow and chloramine.

Chloramine residual sample shall be completed and recorded on all bacteriological sample reports prior to submitting the bacteriological results.

(5) The commissioner may require any of the following, as deemed necessary for public health protection:

(A) A minimum contact time for a public water system as specified in 327 IAC 8-2-1(15) and 327 IAC 8-2-1(19).

(B) Additional chloramine disinfection.

(C) Other disinfection methodology.

(6) Distribution residual for groundwater systems shall be maintained at one of the following:

(A) At a minimum, one and zero-tenths milligram per liter total chlorine.

(B) The residual disinfectant concentration in the distribution system,

measured as total chlorine, combined chlorine, or chlorine dioxide, as

specified in 327 IAC 8-2-8.8(d), cannot be

undetectable more than five percent (5%) of the samples each month, for

any system that the system serves water to the public.

(C) Water in the distribution system with a heterotrophic bacteria concentration

less than or equal to five hundred (500) per milliliter, measured as

heterotrophic plate count (HPC) as specified in 327 IAC 8-2-8.7(3), is deemed

to have a detectable disinfectant residual for purposes of determining

compliance with this requirement. Thus, the value V in the following formula

cannot exceed five percent (5%) in one (1) month, for any two (2) consecutive months:

$$V = \frac{c+d+e}{a+b} \times 100$$

c = number of instances where the residual disinfectant concentration is measured

b = number of instances where the residual disinfectant concentration is not measured

but HPC is measured

- c = number of instances where the residual disinfectant concentration is not measured but not detected and no HPC is measured.
- d = number of instances where no residual disinfectant concentration is detected where the HPC is greater than five hundred (500) per milliliter
- e = number of instances where the residual disinfectant concentration is not measured and HPC is greater than five hundred (500) per milliliter

(7) If the commissioner determines, based on site-specific conditions, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature as specified in 327 IAC 8-2-8.7 and that the system is providing adequate disinfection to the distribution system, the requirements of subdivision (6) do not apply.

(8) The commissioner may require an increase in disinfectant residuals based on bacteriological samples that demonstrate the need for increased residual.

(9) If residual cannot be maintained, operation of the system shall be made to assure the residual can be maintained or additional disinfection shall be installed and operated.

(10) Plant effluent residual concentration shall be maintained at or above one and zero-tenths (1.0) milligram per liter total chlorine.

(11) Adding disinfection may result in an increase in other contaminants of concern, depending on the characteristics of the source water and the distribution system. These contaminants include disinfection byproducts, lead, copper, and arsenic. A system will have the flexibility to select among various corrective actions including the following:

Treatment

Purchasing water from another source.

Options are acceptable to the approval of the commissioner.

(12) A Public Notice describing the effects of using chloramines shall be given to all customers by the Commissioner. The notice shall be given by continuous posting at the premises as determined by the commissioner and shall include but is not limited to the following:

- (A) Potential effects of chloramines in the water for fish tanks or ponds.
- (B) Potential effects of patients on dialysis.

(e) Disinfectant operation records must be kept as follows:

(1) A copy of the daily operating report records signed by the certified operator in responsible charge shall be postmarked by U.S. mail and submitted to the commissioner no later than ten (10) days after the end of each month. These reports shall show the following:

- (A) Name of Chemical.
- (B) Quantity of water treated.
- (C) Type of disinfectant used.

(D) Quantity of disinfectant fed.

(E) Both free and total chlorine residual test results from locations in the distribution system and plant if applicable.

(F) For chloramines, total chlorine residual test results from locations in the distribution system and plant if applicable.

(2) An individual set of records shall be maintained when more than one source of water with separate disinfectant equipment is used. Records shall be maintained for each disinfectant booster station.

(3) A copy of the daily operating report shall be maintained by a certified operator in responsible charge of the public water system or other person designated by the commissioner.

(4) Records for all disinfectant residuals shall be kept for a period of three years.

(5) Records for all chemical feed shall be kept for a period of five (5) years.

(f) Disinfection requirements for Consecutive Communities are as follows:

(1) Consecutive community water systems are required to test daily for disinfectant concentration at the entry point and at points representative within the distribution system.

(2) The commissioner may require disinfection facilities to be installed and used:

(A) whenever the residual in any part of the distribution system cannot be maintained at the residual for chlorine or chloramine as specified in this section; or

(B) if daily operating report records for chlorine or chloramine residuals are not kept or submitted to the commissioner.

(g) If determined by the commissioner that the residual levels for chlorine or chloramines are not performing satisfactorily to their intended use, the system shall be required to increase residual levels or take other steps to ensure that water is adequately disinfected.

(h) The commissioner may approve other forms of disinfection that have not developed extensive experience or records of use in the state of Indiana, provided that the applicant submits evidence that the installation, process, or technique will produce drinking water of satisfactory quality, demonstrate a way to measure a disinfection residual, and provide some type of daily measurement in the distribution system to determine the effectiveness of the disinfection.

(i) All community water systems, nontransient noncommunity water systems with a population of 15,000 or more, and all transient noncommunity water systems that employ disinfection as determined by the commissioner shall disinfect unless the systems meet the following requirements to be considered exempt from disinfection:

(1) The population served by a community water system does not exceed five

hundred (500) individuals based upon the latest census figures or complete records of individuals served.

(2) Evaluation of vulnerability to bacteriological sources will be based on the driller's log, visual inspection of the wells, general geology of the area, and recent bacteriological analyses performed on raw water bacteriological samples. Systems which do not have this data may apply for an exemption as long as bacteriological results are satisfactory.

(3) The system shall not have a history of persistent or recurring contamination as indicated by bacteriological results which show violation of distribution water quality requirements for the most recent five (5) year period. Evaluation of vulnerability to bacteriological sources will be based on a three (3) year compliance period. The most recent twelve (12) months will be weighted more heavily. New systems without this data may apply for an exemption based on available raw water bacteriological samples.

(j) Disinfection exemptions are valid until revoked. A disinfection exemption shall be revoked immediately without prior notice if a system fails to meet the disinfection requirements under subsection (i). An application for a Construction Permit for the installation of disinfectant equipment shall be made within sixty (60) days following revocation. Disinfection equipment shall be installed and a properly certified operator shall be retained within one hundred twenty (120) days after the Construction Permit has been approved. Any of the following conditions will result in revocation:

- (1) Failure to maintain an active program of educating water consumers on prevention of contamination.
- (2) Failure to have a certified operator or responsible person for more than fifteen (15) days.
- (3) Failure to submit bacteriological samples as required by 327 IAC 8-2-8 during more than three (3) months of the twelve (12) months or for two (2) consecutive sampling periods.

A public water system notified by the imposition of disinfectant revocation may appeal the decision to the commission at a hearing held in accordance with IC 4-21.5.

(k) The commission shall require systems that are not mentioned in subsection (i) to disinfect if one of the following occurs:

- (1) Four (4) total coliform positive distribution samples in any four (4) quarter monitoring period or twelve (12) month period.
- (2) Two (2) fecal coliform positive distribution samples in any four (4) quarter monitoring period or twelve (12) month period.
- (3) The design of the well, distribution, or water treatment is determined to contribute to coliform positive samples.

(l) All chemicals that are being added to the public water system shall meet the

following requirements:

- (1) Chemicals shall be added to the water system per manufacturer's recommendation or by the Recommended Standards for Water Works.
- (2) Testing equipment shall be provided where applicable for determining the effectiveness of the chemical treatment.
- (3) All chemicals shall be handled in accordance with 327 IAC 8-12-2.5 (c) and (d) and the Public Water Supply Direct Additive and Indirect Additive Standards.

(m) If a system is reclassified due to any of the circumstances mentioned in 327 IAC 8-13-9 (i), they shall be notified according to 327 IAC 8-12-2.5 (c) and (d) to employ a person that meets the requirements of 327 IAC 8-12-1 (1). (*Water Control Board; 327 IAC 8-13-9*)

### **327 IAC 8-13-10 Operation and Maintenance of Treatment Unit**

Authority:

Affected:

Sec. 10 (a) General requirements for maintaining treatment unit are as follows:

- (1) The treatment unit shall be maintained so that it is capable of performing its original intended function.
- (2) All necessary repairs shall be made to the treatment unit in order to maintain its operation.
- (3) The design of a treatment unit shall not be changed without first receiving approval from the commissioner.

(b) Specific requirements are as follows:

- (1) The operator shall collect quality data to demonstrate that each filter or each bank of filters is operating as designed.
- (2) Pilot scale treatment unit shall be required to demonstrate the applicability of proposed changes to the method of filtration.
- (3) The operator shall require periodic treatment of media if there is evidence of bacterial or other growth hindering proper operation.
- (4) Each filter or each bank of filters shall have an easily readable meter or rate of flow indicator.
- (5) Requirements for rapid rate gravity filters are as follows:
  - (A) Filter redundancies shall be provided and operationally maintained.
  - (B) Filter material shall meet Recommended Standards for Water Works or other standards approved by the commissioner upon demonstration of the ability to meet water quality standards.
  - (C) Backwashing facilities shall be maintained to provide:

- (i) A minimum rate of fifteen (15) gallons per minute per square foot, consistent with water temperatures and specific gravity of the filter media unless otherwise specified by the commissioner.
  - (ii) A reduced rate of ten (10) gallons per minute per square foot may be acceptable for full depth anthracite or granular activated carbon filters.
  - (iii) A reduced rate of water for backwashing is acceptable if air scouring or surface wash is provided.
  - (iv) Backwashing must be done with water that will not cause risk of an MCL violation or increase the health risk to the public.
  - (v) Redundant backwash pumps shall be maintained unless an alternate means of obtaining washwater is available.
  - (vi) A system shall be capable of backwashing for no less than fifteen (15) minutes at the design rate of backwash.
  - (vii) A minimum of one (1) backwash regulator or valve on the backwash line to obtain the desired rate of filter backwash.
  - (viii) A rate-of-flow indicator on the backwash line located for convenient reading by the operator during the backwashing process.
  - (ix) Backwashing by a method which prevents change in the backwash water flow.
  - (x) A system shall conduct media integrity inspection which consists of at a minimum checking for mudballs, channeling, media freeboard, depth of media, and media condition at least once a year.
- (6) Rapid rate pressure filter requirements are as follows:
- (A) The normal use of these filters is for iron and manganese removal. Pressure filters shall not be used in the treatment of surface water or ground water under the influence of surface water or following lime-soda treatment unless approved by the commissioner.
  - (B) The rate of filtration shall not exceed three (3) gallons per minute per square foot of filter area except as determined in-plant testing as approved by the agency having regulated satisfactory results at a higher rate.
- (7) Requirements for backwash wastewater from iron & manganese filters are as follows:
- (A) Smooth opening taps shall be provided for control purposes. Taps shall be located at treatment unit effluent. Testing equipment shall be provided to adequately control the treatment process.
  - (B) Sand filter lagoons, and detention tanks that are used to treat backwash wastewater from iron and manganese removal filters shall meet the Recommended Standards for Water Works, Waste and Disposal Section for sand filter lagoons, and detention tanks.
  - (C) Refer to 327 IAC 6-1 for requirements for land application of sludge from water plant.

(c) Aeration treatment devices described in this section may be used for oxidation, separation of gases or for taste and odor control. The following requirements shall be met:

(1) Aeration treatment devices shall be operated and maintained in accordance with Recommended Standards for Water Works.

(2) Provisions shall be made to ensure accessibility for maintenance and inspection.

(3) Aeration treatment devices shall be protected from insect and light.

(4) Aeration treatment devices shall have the air intake located above grade and the air introduced into the column passed through insect-tight screen and must be as free of dust as possible.

(5) Aeration treatment devices shall be designed to ensure the water outlet is adequately sealed to prevent unwanted loss of air and entrainment of external water sources.

(6) The design for natural draft aeration shall provide that water is distributed uniformly over the top tray.

(7) Pressure aeration may be used for oxidation purposes if a pilot plant or current water quality data indicates the method's effectiveness. Pressure aeration is not approved for removal of dissolved gases. Pressure aeration devices shall be designed to meet the following requirements:

(A) Filters following pressure aeration shall have adequate means for release of air.

(B) Pressure aeration devices shall be designed to cause thorough mixing of compressed air with water being treated and shall provide screened and filtered air, free of obnoxious fumes, dust, dirt and other contaminants.

(8) Other methods of aeration may be permitted if their effectiveness is demonstrated and approved by the department. Methods include but are not restricted to spraying, diffusion of air and mechanical aeration. The treatment process shall be designed to meet the particular needs of the water to be treated.

(9) Requirements for packed column aerators are as follows:

(i) Requirements for packed column aerators are as follows:

(i) The tower shell and distribution system shall be made of material compatible with the water being treated. The material shall be resistant to the aggressiveness of the water and dissolved gases.

(ii) A distribution system shall be provided that distributes the water evenly over the packing.

(iii) Adequate packing support shall be provided to prevent packing deformation.

(iv) A moisture barrier shall be provided to prevent tower misting and icing.

(v) Access manholes shall be provided in the side of the tower for facilitating inspection and replacement of the packing material.

(vi) An access ladder shall be provided.

- (vii) Adequate foundation and lateral support shall be provided to prevent overturning due to wind loads.
- (viii) A screened, rain proof, outlet for air exhaust shall be provided.
- (B) Packing requirements for packed column aerators are as follows:
  - (i) The packing material shall be compatible with use of potable water and shall be resistant to the aggressiveness of the water and the gasses.
  - (ii) A method of cleaning the packing shall be provided when iron or manganese could be responsible for fouling the media.
- (C) Blower requirements for packed column aerators are as follows:
  - (i) The blower shall be provided with a weather protected motor and an adequate foundation.
  - (ii) The blower inlet shall be provided with an
  - (iii) An air flow indicator for detecting air flow shall be provided.
  - (iv) The blower shall be adequately sized to provide sufficient air to achieve the desired removal rates.
- (D) Other requirements for packed column aerators are as follows:
  - (i) A means shall be provided to drain the riser and the tower upon pump shut down.
  - (ii) All buried piping shall be maintained under a pressure greater than the elevation of the ground surface.
  - (iii) Influent and effluent sampling points shall be provided.
  - (iv) A method of determining flow to the aerator shall be provided.
  - (v) A means of bypassing the aerator shall be provided.
  - (vi) Air emission controls shall be provided, necessary to meet any applicable air quality standards.
- (10) Aerated water shall be disinfected prior to entry into the distribution system.
- (11) Basins that are used for aeration or removal of dissolved gases from waters that will require no further treatment other than disinfection shall be protected from contamination from insects, wind borne debris, or rainfall and water draining off the exterior of the basin.
- (12) Aeration basins shall be inspected and maintained at least every two (2) years unless operational history indicates that inspection is needed on a less frequent basis.
- (13) Equipment shall be tested to test for dissolved oxygen (DO), pH, and temperature to determine proper functioning of the aeration device.
- (d) Requirements for aeration mix shall meet the following:
  - (1) Basins shall be equipped with mechanical mixing devices unless other methods, such as baffling, or injection of chemicals at a point of high velocity, are approved by the agency after determining that the other requirements of this section will be met. Variable speed drive equipment is recommended.
  - (2) The detention period for mechanical mixing shall be as short as possible

depending upon the velocity gradient provided by the mixing units.

(3) The rapid mix and flocculation basin shall be as close together as possible.

(4) A rapid mix device or chamber ahead of the solids contact unit may be required by the commissioner, to ensure proper mixing of chemicals.

(e) Clearwell requirements are as follows:

(1) The installation of baffle walls or additional reservoir capacity may be required where necessary to prevent short circuiting and to obtain adequate contact times.

(2) Inspection and cleaning of clear wells shall be done at a minimum of every five

(5) years. More frequent cleaning is necessary if operational problems occur, such as residual solids flowing from the clear well to the distribution system.

(f) Electrical switch gear and electrical controls shall be located outside, in areas not subject to flooding.

(g) Requirements for taking treatment units off line and placing treatment units back on line are as follows:

(1) A public water supply official shall notify the commissioner prior to taking a facility off line if it is likely to adversely affect the quality or quantity of the water in the distribution system.

(2) Newly constructed or repaired treatment units and clearwells shall be cleaned and disinfected before use in accordance with Recommended Standards for Water Works or AWWA Standards.

(3) Samples must be taken to determine the adequacy of disinfection following installation, replacement, or repair.

(4) Water samples shall be required to determine the adequacy of treatment. The number, location, and type of samples that shall be determined by the commissioner.

(h) Facility management practices are required by the commissioner. The sludge removal system shall provide the following:

(1) Sludge pipes shall not be less than 3 inches in diameter and shall be arranged for cleaning.

(2) Provisions shall be made for the operator to observe and sample sludge being discharged from the system during backwashing.

(3) Sludge disposal systems under IAC 6-1 contain additional specific requirements for sludge disposal. Flushing valves or hydrants shall be provided to back flush sludge lines and basins or for other purposes.

(i) When discharging wastewater from a water treatment plant to a sanitary sewer, the water system shall meet the requirements of 327 IAC 7.1-7, (*Water Pollution*

*and: 327 IAC 8-13-10)*

### 327 IAC 8-13-11 Secondary Maximum Contaminant Levels

Authority:

Affected:

Sec. 11. (a) A public water system shall be continuously operated and maintained so that the water is:

- (1) safe in quality;
- (2) clean and adequate in quantity; and
- (3) chemically satisfactory for ordinary domestic consumption.

(b) All Community and Nontransient Noncommunity public water systems shall test in the distribution system for the following aesthetic effects at least once each year:

- (1) Iron.
- (2) Manganese.

The sample shall be taken after treatment and before consumer usage.

(c) A public water system shall test for the following aesthetic effects in table 11-1 upon a written request by the commissioner:

Table 11-1: SECONDARY MAXIMUM CONTAMINANT LEVELS

CONSTITUENT	SECONDARY MCL
Iron	0.3 mg/L
Manganese	0.05 mg/L

*\*mg/L is maximum of substance in 1 liter of water*

A written request to the commissioner shall include the following:

- (1) Investigation of complaints from customers.
- (2) Which constituent to sample.
- (3) Frequency of sampling.
- (4) Justification of the sampling.

(d) If a public water system exceeds the secondary maximum contaminant level listed in Table 11-1 for more than two (2) consecutive sampling periods where the sampling frequency is three (3) months apart or greater, treatment or mitigation of secondary contaminants may be required. Prior to making a decision that treatment is necessary, the commissioner shall consider the following:

Completion from customers.

- (2) Magnitude of the exceedance of the secondary contaminant.
- (3) Results of an affordability analysis performed by the system where treatment options or mitigation are analyzed and their costs are determined and ranked.
- (4) The ability of customers to afford the additional cost of treatment or mitigation.
- (5) The willingness of customers to pay for the additional cost of treatment or mitigation.
- (6) Outcome of a public meeting or other public process with customers where subdivisions (1) through (5) are discussed.
- (7) The system shall provide the information listed in subdivisions (3), (4), (5) and (6), if requested in writing by the commissioner, in order for the commissioner to make a determination of the need to treat for a secondary contaminant exceedance.
- (8) Sequestering is an acceptable form of mitigation.

If sampling is done more frequently than every three (3) months, a running annual average shall be used. If a system agrees to treat the water for an exceedance of a secondary contaminant, subdivisions (3), (4), (5), and (6) need not be performed.

(e) If treatment or mitigation does not resolve the exceedance, the commissioner may require the system to undertake additional treatment or mitigation activities.

(f) The monitoring required by this section shall be done using the following analytical methods:

(1) Measurements for iron shall be conducted using one (1) of the following methods:

- (A) Method 200.7\*;
- (B) Method 200.9\*;
- (C) Method 3120 B\*;
- (D) Method 3111 D\*;
- (E) Method 3113 B\*;

(2) Measurements for manganese shall be conducted using one (1) of the following methods:

- (A) Method 200.7\*;
- (B) Method 200.8\* ;
- (C) Method 200.9\* ;
- (D) Method 3120 B\*;
- (E) Method 3111 D\*;
- (F) Method 3113 B\*;

\*Methods referenced in this section may be obtained as follows:

(1) Methods 200.7, 200.8, and 200.9 may be found in "Methods for the Determination of Metals in Environmental Samples – Supplement 1:, EPA/600/R-94-111, May 1994, available at NTIS, PB 95-125472.

(2) Methods 3120 B, 3113 B, 3111 D, 4110 B, 4500-CI D, 4500-CI B, 2120 B, 5540 C,

3111 B, 2150 B, 4500-SO<sub>4</sub><sup>2-</sup> F, 4500-SO<sub>4</sub><sup>2-</sup> C,D, 4500-SO<sub>4</sub><sup>2-</sup> E, and 2540 C may be found in 18<sup>th</sup> and 19<sup>th</sup> editions of "Standard Methods for the Examination of Water and Wastewater", 1992 and 1995, American Public Health Association, either edition may be used. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005.

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (Water Pollution Control Board; 327 IAC 8-13-11)

### 327 IAC 8-13-12 Operational Testing

Authority:

Affected:

Sec. 12. (a) Sampling, testing and measurement for water quality, quantity, and system collection of operational data shall be performed by the supplier or operator as required by this rule when the system is in operation. Sampling and testing procedures shall be approved by the commissioner. The commissioner may approve sampling and testing on a case by case basis if data shows that individual tests of this section are unnecessary.

(b) The commissioner may, in writing, require a public water system to perform additional sampling and testing when necessary to verify water quantity and quality, treatment plant effectiveness, adequate distribution system operation and to protect water consumers as well as the environment from adverse impacts.

(c) A public water system shall have meters and instrumentation sufficient to record total production of water from all sources including water used from or water sold to other public water systems. Records shall be kept for no later than two (2) years from the effective date of this rule.

(d) Required operational testing equipment are as follows:

(1) Smooth-bore sampling taps shall be provided for collecting representative samples of treated water.

(2) A public water system shall have test equipment for measuring the level of residual of the disinfectant in accordance with 327 IAC 8-2-8.7(5). The commissioner may approve other methodologies.

(3) Testing equipment for specific treatment processes as applicable must be available for plants as follows:

(A) Fluoride adjustment requirements are as follows:

(i) Test equipment for measuring levels of fluoride ion shall be provided.

(ii) Equipment shall be provided for measuring the quantity of

fluoride in the water.

(iii) Equipment utilizing the sodium, 2-(parasulfophenylazo)-1,8-dihydroxy-3, 6-naphthalene disulfonate method (SPADNS) or electrode method is required.

(iv) When also feeding phosphates, the electrode method is required.

(v) The Alizarin Visual method will be approved when specified in specifications where the water can allocate the extra time needed for testing.

(B) Iron removal requirements are as follows:

(i) Test equipment for measuring iron levels shall be provided.

(ii) The equipment shall have the capacity to accurately measure the iron content to a minimum of one-tenth (0.1) milligram per liter.

(C) Manganese removal; the equipment shall have the capacity to accurately measure the manganese content to a minimum of five hundredths (0.05) milligram per liter.

(D) Ion exchange softening; equipment for measuring hardness shall be provided.

(E) Coagulation and filtration; jar test equipment for determining chemical dosages and equipment for measuring pH, hardness, and alkalinity shall be provided.

(F) Lime softening; equipment for measuring hardness, alkalinity, and alkalinity shall be provided.

(G) Reverse osmosis; equipment for measuring total dissolved solids, chlorides, and sulfates shall be provided.

(H) Polyphosphate addition; equipment for measuring ortho-phosphates and total phosphates shall be provided.

(I) Chlorination and disinfection residual testing requirements are as follows:

(i) The equipment shall be capable of measuring residuals to the nearest one-tenth (0.1) milligram per liter in the range below five-tenths (0.5) milligram per liter.

(ii) The equipment shall be capable of measuring residuals to the nearest two hundredths (0.02) milligram per liter between the range of five-tenths (0.5) milligram per liter to two (2.0) milligrams per liter.

(J) Monitoring equipment for monitoring pH shall be provided using the electrode method.

(4) The commissioner may accept other forms of operational testing equipment.

*(Water Pollution Control Board IAC 8-13-12)*

### 327 IAC 8-13-13 Reporting Requirements

Authority:

Affected:

Sec. 13. All suppliers of water for community water systems shall submit a Monthly Report of Operation (MRO) on forms prescribed by the commissioner. Computer generated forms are acceptable if, at a minimum, all the required data are submitted on the

form, and the form must be submitted and received for approval by the commissioner prior to use. Forms already in use from the effective date of this rule can continue to be used. If the commissioner needs additional information, new forms can be requested.

Reports shall include the following data if applicable:

- (1) Daily quantities of water treated.
- (2) Daily quantities of water distributed.
- (3) Daily quantities of chemicals added to the water.
- (4) Daily operation of treatment processes, including backwashing of filters, amount of filter run time and total gallons of backwash.
- (5) Results of chemical, physical, or other tests performed for plant control.
- (6) Groundwater depth measurements, both static and pumping measurements where applicable as required by 327 IAC 8-13-8.
- (7) Totals and averages of the above measurements where space is provided on the report form.
- (8) Other data determined necessary by the commissioner.

A public water system may upon approval of the commissioner reduce their reporting requirements. All MRO's shall be submitted no later than ten (10) days after the end of each month. All MRO's shall be kept for a period of five (5) years. (Water Pollution Control Board; 327 IAC 8-13-13)

### 327 IAC 8-13-14 Storage Requirements

Authority:

Affected:

Sec. 14. (a) General water storage requirements are as follows:

- (1) A storage tank used for the storage of groundwater or treated water which is connected to a distribution system of a public water system must be covered, constructed, and located adequately protected from contamination.
- (2) Storage facilities must be inspected at least once every five (5) years and maintained as necessary.
- (3) Interior and exterior paint on steel elevated water storage tanks or treatment structures must be inspected at least once every five (5) years by an individual qualified to evaluate the integrity of the paint system. The interior and exterior paint coating must be repainted as necessary to maintain coating and structural integrity. A person who is not a water utility employee may perform the inspection if experienced in paint inspection.
- (4) Upon completion of the water storage facility inspection, a report, documenting the condition of the storage facility, must be kept on site or available for review.
- (5) Storage tanks must be operated in a manner that prevents freezing.
- (6) Storage tanks must be operated in a manner that prevents excessive holding time which is determined by:
  - (A) level of disinfection residual; or

**(B) positive total coliform samples.**

**(b) Location requirements for water storage facilities are as follows:**

- (1) Location of storage facilities must be accessible to authorized personnel during the entire year.**
- (2) Where necessary, road improvements shall be installed to provide year-round access.**
- (3) Storage facilities and access roads must be located on property:**
  - (A) owned by the water system; or**
  - (B) for which other legally binding access rights have been obtained.**

**(c) Overflow pipe requirements are as follows:**

- (1) The overflow pipe of a water storage structure must:**
  - (A) Discharge with a free air break over a drainage inlet, splash pad, or riprap.**
  - (B) Be maintained according to 327 IAC 8-10.**
- (2) Overflows may not be directly connected to a sanitary sewer.**
- (3) The overflow must be screened with mesh no larger than 1/4 inch installed within the pipe at the location least susceptible to varminism and the presence of animals.**
- (4) Negative impacts to the environment from the discharge of raw water shall be prevented.**

**(d) Disinfection requirements for water storage facilities are as follows:**

- (1) Finished water storage structures must be disinfected before being put into service and before being returned to service following maintenance or repair work.**
- (2) Procedures for disinfection of water storage facilities outlined in the current AWWA standard C652 must be followed.**
- (3) A chlorine residual disinfection of water storage facilities may be acceptable to the community.**

**(e) All closed and water storage tanks must have a liquid level indicator located at the tank site that meets the following requirements:**

- (1) The indicator must be a float with a moving target, an ultrasonic level indicator, or a pressure gauge calibrated in feet of water.**
- (2) If an elevated tank or pipe has a float with a moving target indicator, it must also have a pressure indicator located at ground level.**
- (3) Pressure gauges must not be less than three (3) inches in diameter and calibrated at not more than two (2) feet intervals.**
- (4) Remote reading gauges at the public water system's treatment plant or pumping station will not eliminate the requirement for a gauge at the tank site or another method for measuring volume, unless the tank is located at the plant or station.**

(f) Hydropneumatic or pressure tanks must meet the following requirements:

(1) Hydropneumatic or pressure tanks installed after July 17, 1999 must meet the requirements set forth in 327 IAC 8-3.4-14.

(2) All pressure tanks must install and maintain a pressure release device and an easily readable pressure gauge.

(g) No tank or container that has previously been used for any non-potable liquid may be used to store potable water. Where a used tank is proposed for reuse, a letter from the previous owner or owners must be submitted to the commissioner which states the history of the tank.

(h) The commissioner may approve, upon written request, non-standard forms of storage or alternative storage requirements provided that there is documentation to support the effectiveness of the request. (Water Pollution Control Board; 327 IAC 8-13-15)

### 327 IAC 8-13-15 Repair Work and Emergency Operation

Authority:

Affected:

Sec. 15. (a) A supplier of water shall protect the water system from contamination when any part of the system is out of service for repair, construction, alteration, or replacement.

(b) Requirements for disinfection following repair, alteration, or replacement are as follows:

(1) Any part of a public water system that has

(A) direct contact with flushed water;

(B) a possibility of exposure to any pathogen or contaminant; and

has been out of service for repair, construction, alteration, or replacement;

shall be disinfected in accordance with subdivision 2 before being returned to service.

(2) A public water system that meets the requirements of subdivision 1 shall be disinfected in accordance with the following:

(A) For disinfection of water mains, AWWA Standard C651-99;

(B) For disinfection of water storage facilities, AWWA Standard C652-02;

(C) For disinfection of water treatment plants, AWWA Standard C653-97;

(D) For disinfection of wells, AWWA Standard C654-97; or

(E) Another method approved by the commissioner.

(3) Disinfection must be completed:

(A) by, or under the direction of, an operator properly certified pursuant to 327 IAC 8-3.4-15; or

(B) under the direction of water personnel in charge, if a system does not have a certified operator.

(c) Repair, alteration, or replacement of water mains shall be made in accordance with the AWWA standards or another method approved by the commissioner.(site specific)

(d) Bacteriological testing requirements following repair, alteration, or replacement of water mains or other system components are as follows:

(1) Water samples must be submitted and analyzed by a laboratory certified by the Indiana Department of Health.

(2) All samples shall be marked special purpose.

(3) When a water main break is repaired in the water system, a bacteriological sample shall be taken in the area of the break within one (1) working day if any of the following occur:

(A) A detectable disinfectant residual according to 327 IAC 8-13-9 is not maintained.

(B) Positive pressure according to 327 IAC 8-13-7 is not maintained during the repair, alteration, or replacement.

(4) Bacteriological samples shall be taken after repair is completed to determine record for determining the procedures effectiveness. If not adequate, a disinfectant residual after the repair or positive pressure during the repair. If the direction of flow is unknown, then samples shall be taken on both side of the repair, alteration, or replacement.

(5) The commissioner may require additional samples to determine the adequacy of disinfection following line installation, replacement, or repair.

(e) A boil water advisory shall be issued after repair, alteration, or replacement of water mains or other system components in accordance with the following:

(1) For the length of time until water samples for microbiological analysis are found negative for microorganisms and one (1) of the following is met:

(A) A disinfectant residual according to 327 IAC 8-13-9 and disinfectant samples collected in the area of the repair are no less than disinfectant residual in the areas surrounding the repair after flushing.

(B) A continuous positive disinfection in its distribution system and positive pressure that is maintained according to 327 IAC 8-13-7 continues to be maintained after the repair, alteration, or replacement.

(2) Whenever the commissioner finds that a water main has been contaminated including the occurrence of one (1) or more of the following situations:

(A) Submersion or break in tainted water.

(B) One hundred (100)(up for discussion) feet of main.

(C) The affected main can not be disinfected according to AWWA Standards (site specific)

A boil water advisory shall consist of the following:

- (1) Name of public water system.
- (2) Date of advisory.
- (3) A description of the violation that occurred, including the potential health effects.
- (4) The population at risk and if alternate water supplies need to be used.
- (5) Actions the public water system are taking to correct the problem.
- (6) Actions consumers can take.
- (7) How to contact the public water system for more information.

(g) A boil water advisory issued under subsection (e) may be rescinded when bacteriological samples collected in accordance with subsection (d) show that the water is bacteriologically safe for consumption. For this part, "bacteriologically safe for consumption" means:

- (1) After flushing, the initial sample collected after main repair, alternate replacement is absent for total coliforms; or
- (2) After flushing, if the initial sample collected after main repair, alternate replacement is present for total coliforms, a minimum of three consecutive samples taken twenty-four (24) hours apart are total coliform absent. A shorter time period may be approved by the commissioner.

(h) A copy of all boil water advisories shall be submitted to the commissioner within twenty-four (24) hours of being issued to the public by one of the following methods:

- (1) Mail;
- (2) Facsimile;
- (3) Electronic mail;
- (4) Hand delivery; or
- (5) Other means determined by the commissioner.

(i) Operators of public water supplies shall immediately notify the commissioner when it is known or reasonably suspected that a water supply has become contaminated. On holidays, and outside office hours, the commissioner may be reached through the emergency response unit at 1-888-233-SPIL.

(j) Emergency operating procedures are as follows:

- (1) A boil water advisory shall be issued when bacteriological analyses show persistent low-level contamination or gross contamination.
- (2) Boil water advisories must be issued to the customers within twenty-four (24) hours.
- (3) Issuance of a boil water advisory does not relieve the water system from making public notification in accordance with 327 IAC 8-2.1-7.

**(4) If a boil water advisory is issued pursuant to this section, it shall remain in effect until the following requirements are met:**

**(A) Water distribution pressures meet the requirements of 327 IAC 8-13-7.**

**(B) The disinfectant level throughout the system is maintained in accordance with 327 IAC 8-13-9.**

**(C) The boil water advisory shall remain in effect until requirements of 327 IAC 8-2-8 are met and water samples collected for microbiological analysis are found negative for coliform organisms.**

**(5) The commissioner may allow lifting of the boil water advisory if the system can show extenuating circumstances.**

**(6) A boil water advisory shall be issued if the turbidity of finished water produced by a surface water treatment plant exceeds five nephelometric turbidity units (NTU). The boil water advisory shall remain in effect until:**

**(A) The water entering the distribution system has a turbidity not greater than one and zero-tenths (1.0) nephelometric turbidity units (NTU).**

**(B) The distribution system has been thoroughly flushed.**

**(C) A residual disinfectant level in accordance with 327 IAC 8-13-9 has been met.**

**(D) Water samples collected for microbiological analysis are found negative for coliform organisms.**

**(k) An issuance of a Drinking Water Construction Notice shall be made to all affected parties before repairs, alteration, or replacement of water mains or other system components is started.**

**(l) An emergency plan, contingency plan, or other written approach to provide safe drinking water in emergency situations is required. The plan must include the following:**

**(1) A means to inform consumers about the emergency plan.**

**(2) Procedures to follow for the types of emergencies including the following:**

**(a) Severe weather including the following:**

**(i) Floods.**

**(ii) Drought.**

**(iii) Water.**

**(C) Vandalism.**

**(D) Possible terrorist attacks.**

**(3) A means or approach to keep key components in operation which would include availability of back up power if an outage occurs.**

**(4) A description of potential alternate sources of water.**

**(5) Identification of procedures to notify critical water users of an emergency.**

**(6) Chain of command which shows officials in responsible charge.**

**(7) Communication with local officials.**

If a system has already developed an emergency plan or a contingency plan, the system may refer to that plan to comply with this section. (Water Pollution Control Board; 327 IAC 8-13-15)

### 327 IAC 8-13-16 Significant Deficiencies

Authority:

Affected:

Sec. 16. (a) The department shall evaluate each system during the sanitary survey to determine if significant deficiencies exist. Examples of significant deficiencies can include the following:

(1) Source issues, including:

(A) Raw water quality monitoring that is indicative of immediate sanitary risk;

(B) Activities or pollution sources in the immediate source watershed that will cause sanitary risks;

(C) Location of a well making it vulnerable to surface water runoff;

(D) A well that is not properly sealed;

(E) Spring boxes that are poorly constructed or prone to flooding;

(2) Treatment issues, including:

(A) Inadequate disinfection contact time;

(B) One or more of the treatment processes incapable of producing water that meets standards under all conditions of raw water quality;

(C) No provisions to warn operators of membrane failures;

(D) Failure to have disinfection profile required under IESWTR and LT1ESWTR (will need the citations available for review).

(3) Distribution and transmission issues, including:

(A) Customers obtaining and using drinking water, raw water from the water transmission main;

(B) Water transmission main equipped with a bypass around the treatment plant without a valve to prevent unintended bypass of untreated water;

(C) Low residuals in the distribution system which regularly do not meet minimum required levels;

(D) Pressure in the distribution system below twenty (20) psi during peak flow conditions;

(E) High leakage rates which pose unacceptable risks of back siphonage.

(4) Finished water storage issues, including:

(A) Inadequate elevation of storage facilities;

(B) Inadequate sealing of tank to prevent entry of contamination;

(C) Failure to inspect elevated tank for sanitary defects.

Pumps, pump facilities, and controls issues, including:

- (A) Storage of materials at pumping station that offer potential for contamination of the water;
  - (B) Storage of materials at pumping station that pose safety risks to operators;
  - (C) Cross connections are present;
  - (D) Auxiliary power is necessary to keep pressures above twenty (20) during commonly experienced power outages.
  - (6) Monitoring, reporting, and data verification issues, including:
    - (A) The system has multiple violations for one (1) or more contaminants or disinfectant residuals;
    - (B) Operators are using improper procedures or methods when conducting onsite laboratory analyses;
    - (C) The system is not using a certified laboratory;
    - (D) The system has been falsifying data.
  - (7) System management and operations issues, including:
    - (A) The system has inadequate personnel to man the plant as required by IAC 8-12;
    - (B) The system has not developed a plan for loss of water during emergencies.
  - (8) Operator compliance with department requirements, including:
    - (A) The system is required to have a certified operator, but not had one (1) for forty-five (45) or more days;
    - (B) The system's operator is not complying with the continuing education requirements set forth in IAC 8-12.
- (b) The department shall report significant deficiencies of the system, in writing, no later than forty-five (45) days after the date of the survey, or portion of sanitary survey yielding the significant deficiency.
- (c) The system shall respond in writing to any significant deficiency found in a sanitary survey performed by the department or an agent authorized by the department. Response requirements are as follows:
- (1) Response must be made within forty-five (45) days of receipt of the report;
  - (2) Response must show how the system will address significant deficiencies noted in the survey;
  - (3) Response must include what schedule the system will address significant deficiencies noted in the survey.
  - (d) If a Composite Correction Program is required under the IESWTR or LSWTR (will need rule citations), the system must implement any follow up recommendations that result as part of the program.
  - (e) The Commissioner may require a shorter time period frame if the system is found to be an immediate health risk or effect according to 11a

**(f) Facility may have the opportunity to correct deficiency prior to enforcement referral specified in this rule. (Water Pollution Control Board; 327 IAC 8-13-16)**

**DRAFT**